



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/546,135	08/19/2005	Christian Reufer	032301.426	2634

25461 7590 09/28/2006

SMITH, GAMBRELL & RUSSELL
SUITE 3100, PROMENADE II
1230 PEACHTREE STREET, N.E.
ATLANTA, GA 30307-3592

EXAMINER

WONG, EDNA

ART UNIT PAPER NUMBER

1753

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/546,135

Applicant(s)

REUFER ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date August 19, 2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

Specification

The disclosure is objected to because of the following informalities:
page 7, line 13, it is unclear what is meant by the words "of the of".

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

line 6, recites "carrying out the anodic alkoxylation in the absence of a mediator".

This claim limitation is further limiting the preamble. It is unclear what is the relationship between the carrying out step and the alkoxylation step recited in claim 1, lines 2-5.

Art Unit: 1753

lines 6-7, it appears that "a diamond film anode or a gold anode" is the same as the oxidation-resistant anode recited in claim 1, line 5. However, it is unclear if it is. If it is not, then what is the relationship between the diamond film anode or gold anode, and the oxidation-resistant anode?

Claim 2

lines 1-2, it appears that "an organic compound" is the same as that recited in claim 1, line 2. However, it is unclear if it is. If it is, then it is suggested that the word "an" be amended to the word -- the --.

line 4, recites "anodically alkoxyated".

This claim limitation is further limiting the preamble of claim 1. It is unclear what is the relationship between this claim limitation and the alkoxyating step recited in claim 1, lines 2-5.

Claim 6

lines 2-3, "the solvent" lacks antecedent basis.

Claim 7

line 2, recites "anodic alkoxylation".

This claim limitation is further limiting the preamble of claim 1. It is unclear what

is the relationship between this claim limitation and the alkoxylation step recited in claim 1, lines 2-5.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

I. Claims 1-3, 6-8, 10 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by **Degner et al.** (US Patent No. 4,441,970) in view of **Grant & Hackh's Chemical Dictionary** (Fifth Edition, © 1987, p. 398).

Degner teaches a method for the anodic alkoxylation of an organic compound comprising:

(a) alkoxylation a mixture containing the organic compound (= 2,5-dihydrofuran) and a primary alcohol with 1-4 C atoms (= an alkanol) [col. 2, lines 11-16] is alkoxylation (= synthesis of 2,5-dimethoxy-2,5-dihydrofuran) [col. 1, lines 47-64] in an unpartitioned electrolytic cell (= a non-compartmented cell) [col. 2, lines 8-11] in the presence of a supporting electrolyte salt (= a conducting salt) that is soluble in the mixture (= dissolves in the 2,5-dihydrofuran/alkanol mixture) [col. 2, lines 18-20] but in the absence of a solid polymer electrolyte at an effective cell voltage (= electrochemically oxidation) on an oxidation-resistant anode (= materials which are stable under the conditions of

Art Unit: 1753

electrolysis are employed for the anode) [col. 2, lines 37-38]; and

(b) carrying out the anodic alkoxylation in the absence of a mediator, using a diamond film anode or a gold anode (= noble metals) [col. 2, lines 37-41; and Grant & Hackh's, page 398, definition of "noble metal"].

The organic compound is selected from the group consisting of cyclic ethers, N-substituted amides, carbonyl compounds, alkyl aromatic hydrocarbons and alkyl heteroaromatic hydrocarbons are anodically alkoxyated (= 2,5-dihydrofuran) [col. 2, lines 11-14].

The cyclic ether is selected from the group consisting of furans, dihydrofurans, tetrahydrofurans, 1,2-pyrans, 1,4-pyrans and the di- and tetrahydro compounds thereof, and 1,4-pyrones and the di- and tetrahydro compounds thereof (= 2,5-dihydrofuran) [col. 2, lines 11-14] is methoxylated or ethoxylated (= synthesis of 2,5-dimethoxy-2,5-dihydrofuran) [col. 1, lines 47-64], with at least one C atom bound to the ether oxygen atom in the hydrogenated furans, pyrans and pyrones having a hydrogen atom.

The alkoxylation is carried out in the alcohol that corresponds to the alkoxy group as the solvent (= methanol) [col. 2, lines 14-16] and the supporting electrolyte salt used is a tetraalkyl ammonium salt, the anion of which is selected from the group consisting of ClO_4^- , BF_4^- , PF_6^- , SbF_6^- , R-SO_3^- and R-SO_4^- , wherein R stands for alkyl which can also be halogenated (= tetramethylammonium methosulfate) [col. 2, line 25].

The supporting electrolyte salt is used in a quantity of 0.1-5 wt %, relative to the organic compound that is to be alkoxyated (= 1 to 10% by weight of conducting salt)

[col. 2, lines 32-36].

The organic compound is methoxylated (= synthesis of 2,5-dimethoxy-2,5-dihydrofuran) [col. 1, lines 47-64].

The voltage is in the range of from 5 to 25 V (= from 1 to 30 A/dm²) [col. 2, lines 45-50].

The quantity of electrolyte salt is 0.3-3 wt % (= 1 to 10% by weight of conducting salt) [col. 2, lines 32-36].

Since Degner teaches all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

II. Claims 1-12 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Puetter et al. (US Patent No. 6,533,916 B1).

Puetter teaches a method for the anodic alkoxylation of an organic compound comprising:

(a) alkoxylation wherein a mixture containing the organic compound (col. 8, line 65 to col. 10, line 59) and a primary alcohol with 1-4 C atoms (col. 8, lines 17-39) is alkoxylation (= methoxylation) [col. 6, lines 17-18] in an unpartitioned electrolytic cell (= an undivided cell) [col. 6, lines 59-64] in the presence of a supporting electrolyte salt (= an auxiliary salt) that is soluble in the mixture (col. 7, lines 42-67) but in the absence of a solid polymer electrolyte at an effective cell voltage (= 1 to 100 V) [col. 7, lines 26-33] on an oxidation-resistant anode (= a diamond electrode) [col. 2, lines 29-32]; and

(b) carrying out the anodic alkoxylation (= methoxylation) [col. 6, lines 17-18] in the absence of a mediator, using a diamond film anode or a gold anode (= a diamond electrode) [col. 2, lines 29-32].

The organic compound is selected from the group consisting of cyclic ethers, N-substituted amides, carbonyl compounds, alkyl aromatic hydrocarbons and alkyl heteroaromatic hydrocarbons are anodically alkoxyated (= tetrahydrofuran and furan) [col. 10, lines 54-58].

The cyclic ether selected from the group consisting of furans, dihydrofurans, tetrahydrofurans, 1,2-pyrans, 1,4-pyrans and the di- and tetrahydro compounds thereof, and 1,4-pyrones and the di- and tetrahydro compounds thereof is methoxylated or ethoxylated, with at least one C atom bound to the ether oxygen atom in the hydrogenated furans, pyrans and pyrones having a hydrogen atom (= tetrahydrofuran and furan) [col. 10, lines 54-58].

The amide selected from the group consisting of lactams with 5-7 ring members, N-acylated saturated and unsaturated N-heterocyclic compounds and open-chain N-alkyl or N,N-diallyl fatty acid amides is methoxylated or ethoxylated, with a carbon atom bound to the nitrogen having at least one hydrogen atom (col. 10, lines 25-41 and lines 58-59).

A ketone with a methyl group or methylene group bound to the carbonyl C atom is methoxylated or ethoxylated (= methoxylation of acetone) [col. 9, lines 11-17; and col. 10, lines 5-9].

The alkoxylation is carried out in the alcohol that corresponds to the alkoxy group as the solvent (= methanol) [col. 8, lines 23-39] and the supporting electrolyte salt used is a tetraalkyl ammonium salt, the anion of which is selected from the group consisting of ClO_4^- , BF_4^- , PF_6^- , SbF_6^- , R-SO_3^- and R-SO_4^- , wherein R stands for alkyl which can also be halogenated (= tetraalkylammonium methylsulfonate) [col. 7, lines 42-67].

The anodic alkoxylation is carried out at a voltage in a range from 1-50 V (= 1 to 100 V) [col. 7, lines 26-33].

The supporting electrolyte salt is used in a quantity of 0.1-5 wt %, relative to the organic compound that is to be alkoxyated (= approx. 0.1% to approx. 10 % by weight) [col. 7, lines 42-67].

The carbonyl compound is a ketone (col. 9, lines 11-17).

The organic compound is methoxylated (col. 6, lines 17-18).

The voltage is in the range of from 5 to 25 V (= 1 to 100 V) [col. 7, lines 26-33].

The quantity of electrolyte salt is 0.3-3 wt % (= approx. 0.1% to approx. 10 % by weight) [col. 7, lines 42-67].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1753

I. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Degner et al.** (US Patent No. 4,441,970) in view of **Grant & Hackh's** Chemical Dictionary (Fifth Edition, © 1987, p. 398) as applied to claims 1-3, 6-8, 10 and 14-15 above.

Degner and Grant & Hackh's are as applied above and incorporated herein.

The method of Degner differs from the instant invention because Degner does not disclose wherein the alkyl that is halogenated is selected from the group consisting of CF_3^- , CCL_3^- , and CF_3CH_2^- , as recited in claim 13.

Degner teaches tetramethylammonium methosulfate. Halides, sulfonates or alcoholates are preferably employed as conducting salts (col. 2, lines 18-31).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the tetramethylammonium methosulfate described by Degner with wherein the alkyl that is halogenated is selected from the group consisting of CF_3^- , CCL_3^- , and CF_3CH_2^- because structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties (MPEP § 2144.08(II)(A)(4)(c) and §2144.09).

II. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Puetter et al.** (US Patent No. 6,533,916 B1) as applied to claims 1-12 and 14-15 above.

Art Unit: 1753

Puetter is as applied above and incorporated herein.

The method of Puetter differs from the instant invention because Puetter does not disclose wherein the alkyl that is halogenated is selected from the group consisting of CF_3 -, CCL_3 -, and CF_3CH_2 -, as recited in claim 13.

Puetter teaches tetramethylammonium methylsulfonate. Fluoride is an anion (col. 7, lines 42-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the tetramethylammonium methylsulfonate described by Puetter with wherein the alkyl that is halogenated is selected from the group consisting of CF_3 -, CCL_3 -, and CF_3CH_2 - because structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties (MPEP § 2144.08(II)(A)(4)(c) and §2144.09).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number

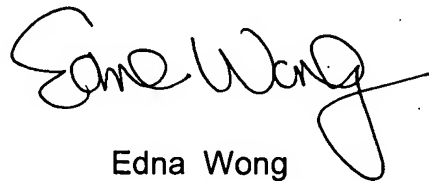
Art Unit: 1753

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Edna Wong
Primary Examiner
Art Unit 1753

EW
September 22, 2006